

## Syphilis

Syphilis, a genital ulcerative disease, facilitates the transmission of HIV and may be particularly important in contributing to HIV transmission in those parts of the country, such as the South, where rates of both infections are high. Untreated early syphilis during pregnancy results in perinatal death in up to 40% of cases and, if acquired during the four years preceding pregnancy, may lead to infection of the fetus in over 70% of cases.<sup>1</sup>

The rate of primary and secondary (P&S) syphilis reported in the United States is at its lowest level since reporting began in 1941. This unprecedented low rate and the concentration of the majority of syphilis cases in a small number of geographic areas have led to the development of the National Plan to Eliminate Syphilis from the United States, which was announced by Surgeon General David Satcher in October 1999.<sup>2</sup> Collaboration with diverse organizations, public health professionals, the private medical community, and other partners working in STD and HIV will be essential if this effort is to be successful.<sup>3</sup>

The rate of P&S syphilis in the United States declined by 88% from 1990 through 1999. Although the 5.4% decline in the number of P&S syphilis cases reported in 1999 is less than the declines of approximately 20% per year since the last major syphilis epidemic peaked in 1990, it is possible that this smaller decline at least partially reflects improved case finding and reporting resulting from the national syphilis elimination effort. Syphilis remains an important problem in the South and in some urban areas in other regions of the country. In 1999 large outbreaks occurred in several states. Recently, outbreaks of syphilis among men who have sex with men (MSM) have been reported, possibly reflecting an increase in risk behavior in this population associated with the availability of highly active antiretroviral therapy for HIV infection.<sup>4,5</sup>

As with the other STDs addressed in this report, the number of syphilis cases reported to CDC is less than the actual number of cases occurring among the United States population. As a result, for most areas, the number of syphilis cases reported to CDC reflects many factors, only one of which is the occurrence of the disease among the population. In addition, differential reporting of syphilis cases from public and private sectors may magnify the race and ethnicity differences in the reported rates.

- In 1999, 6,657 cases of P&S syphilis were reported to CDC, a decline of 5.4% compared with 1998, when 7,035 cases were reported. The number of P&S syphilis cases reported in 1999 is the lowest yearly number of cases reported since 1957 (Table 1). The reported rate of P&S syphilis in the United States in 1999 (2.5 cases per 100,000 persons) was slightly below the rate reported in 1998 (2.6 cases per 100,000). The 1999 rate is below the Healthy People 2000 (HP2000) national objective of 4.0 cases per 100,000 persons as it has been since 1997 (Figure 24, Table 1). However, the current reported rate in the United States exceeds the new Healthy People 2010 (HP2010) provisional objective of 0.2 cases per 100,000 persons.<sup>6</sup>

- Since the peak rate in 1990, the rate of early latent syphilis has exceeded the rate of P&S syphilis. There were approximately 0.9 reported cases of early latent syphilis for every reported case of P&S syphilis in the five years preceding 1990 and 1.8 reported cases of early latent syphilis for every reported case of P&S syphilis in 1999 (Table 1).
- Since the peak rate in 1993, the rate of late and late latent syphilis has exceeded the rate of P&S syphilis. There were approximately 0.6 reported cases of late and late latent syphilis for every reported case of P&S syphilis in the five years preceding 1993 and 2.5 reported cases of late and late latent syphilis for every reported case of P&S syphilis in 1999 (Table 1).
- In 1999, P&S syphilis rates in 39 states and three outlying areas were below the HP2000 national objective of 4.0 cases per 100,000 persons (Figure 25, Table 24). In addition, 12 states reported 1999 rates equal to or below the HP2010 provisional objective of 0.2 cases per 100,000 persons. Fourteen states and two outlying areas reported five or fewer cases of P&S syphilis in 1999.
- In 1999, 2,473 (79%) of 3,115 counties in the United States reported no cases of P&S syphilis compared with 2,430 (78%) counties reporting no cases in 1998. Of 642 counties reporting at least one case of P&S syphilis in 1999, 377 (59%) reported rates below the HP2000 objective of 4.0 cases per 100,000 persons. Alternatively, rates of P&S syphilis were above the HP2000 objective for 265 counties in 1999 (Figure 26). These 265 counties (9% of the total number of counties in the U.S.) accounted for approximately 74% of the total P&S syphilis cases reported in 1999.
- In 1999, 2,495 (80%) of the 3,115 United States counties reported P&S syphilis rates equal to or less than the provisional HP2010 objective of 0.2 cases per 100,000 persons.
- In 1999, the largest numbers of cases of P&S syphilis were reported from 22 counties, and the three independent cities of Baltimore, MD, Danville, VA, and St. Louis, MO (Table 32). These 25 areas account for half of the total number of P&S syphilis cases that were reported in the United States in 1999.
- In 1999, the reported rate of P&S syphilis among men (2.9 cases per 100,000 males) was 1.5 times greater than the rate among women (2.0 cases per 100,000 females). The overall male to female rate ratio has risen steadily since 1994 when it was 1.1. The male to female rate ratio has increased since 1994 in all racial ethnic groups except American Indian/Alaska Natives. The change in the male to female rate ratio was most notable in Hispanics, where it increased from 1.8 in 1994 to 2.9 in 1999. The male to female ratio of P&S syphilis rates was greater in 1999, as compared to the ratio in 1998, for 16 (59%) of the 26 states and the District of Columbia that reported 25 or more cases in 1998 (Tables 25-27). In Seattle, and possibly in other cities, the increase in the male to female rate ratio in 1999 corresponded to an increase in syphilis among MSM.<sup>5</sup>
- The P&S syphilis rate for 1999 in the southern region of the United States (4.5 cases per 100,000 persons) was higher than the rate reported in any other region of the country. In addition, the 1999 rate in the South exceeds the HP2000 objective (Figure 27, Table 25). The rates in the other three regions of the country (Northeast, Midwest, and West) in 1999 were below the HP2000 objective. The

1999 reported rates in all regions exceeded the HP2010 provisional objective of 0.2 cases per 100,000 persons.

- Reported rates and case counts for P&S syphilis were calculated within each of the four geographic regions of the United States (Northeast, Midwest, South, and West) and for each of four categories representing the level of urbanization (urban, peri-urban, peri-rural, rural) (see Figure 28 and the **Appendix** for definitions of the categories). Reported P&S syphilis rates in the South were higher than the other regions of the country for all urbanization categories. Of the 6,606 cases of P&S syphilis reported at the county level in 1999, that is, those cases that could be classified into a location/urbanization category, 65% occurred in the South.
- The overall 1999 rate of P&S syphilis reported for selected large cities with populations of 200,000 persons or more (5.1 per 100,000 persons) was the same as the rate reported for these cities in 1998 (Figure 29, Table 29). However, rates exceeded the HP2000 objective in 24 (38%) of 64 large cities in the United States and outlying areas for which data were available. Rates exceeded the provisional HP2010 objective of 0.2 cases per 100,000 persons in 57 (89%) of the 64 selected cities (Table 28).
- In 1999, the rate of P&S syphilis reported in African-Americans (15.2 cases per 100,000 persons) was 30.4 times greater than the rate reported in whites (0.5 cases per 100,000 persons). However, this differential was substantially less than in 1995, when the rate of P&S syphilis among African-Americans was 56.1 times greater than the rate reported among whites (Table 23B).
- During the period from 1995 to 1998, the rates of P&S syphilis within racial and ethnic groups have generally declined. However, these group-specific rates remained relatively constant between 1998 and 1999 with the exception of the rate among non-Hispanic blacks, which decreased 10% in 1999 from the 1998 value (Figure 31, Table 23B). The 1999 reported rate for non-Hispanic blacks (15.2 cases per 100,000 persons) was 30 times greater than the rate for non-Hispanic whites.
- Between 1998 and 1999, the overall rate of congenital syphilis decreased by 34% in the United States from 21.6 to 14.3 cases per 100,000 live births (Figure 34, Table 37). In addition, among the 24 states and outlying areas with five or more reported cases of congenital syphilis in 1999, 18 had rates that decreased from the 1998 value. Eleven of these states and Puerto Rico had decreases of 30% or more between the 1998 and 1999 reported rates (Table 39).
- The continuing decrease in the rate of congenital syphilis likely reflects the substantial reduction in the rate of P&S syphilis among women that has occurred in the last decade (Figure 33).<sup>7</sup> During the period from 1991 through 1999, the average yearly percentage decrease in the congenital syphilis rate was 22% (Table 37) which is equal to the average yearly percentage decrease in the rate of P&S syphilis reported among women for the years 1990 through 1998.
- In 1999, only one state or outlying area (New Jersey) had a reported rate of congenital syphilis that exceeded the HP2000 objective of 40 cases per 100,000 live births. Twenty-eight states and one outlying area, however, had reported congenital syphilis rates in 1999 that exceeded the HP2010 provisional objective of 1 case per 100,000 live births<sup>6</sup> (Table 38).

- The HP2000 congenital syphilis objective of 40 cases per 100,000 live births was exceeded in 18 (28%) of the 64 selected cities with populations of 200,000 or more persons (Table 40). Six of these cities (Newark, Baltimore, Detroit, St. Louis, Chicago, and Atlanta) had reported rates that were more than twice the HP2000 objective. Thirty-seven of the selected cities reported congenital syphilis rates in 1999 that exceeded the provisional HP2010 objective of 1 case per 100,000 live births.<sup>6</sup>
- Additional information on syphilis and congenital syphilis can be found in the **Special Focus Profiles** section.

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<sup>1</sup>Ingraham NR. The value of penicillin alone in the prevention and treatment of congenital syphilis. *Acta Derm Venereol* 31 (suppl 24): 60, 1951.

<sup>2</sup>Division of STD Prevention. *The National Plan to Eliminate Syphilis from the United States*. National Center for HIV, STD, and TB Prevention, Centers for Disease Control and Prevention, 1999.

<sup>3</sup>Centers for Disease Control and Prevention. Primary and secondary syphilis – United States, 1998. *MMWR* 1999;48:873-8.

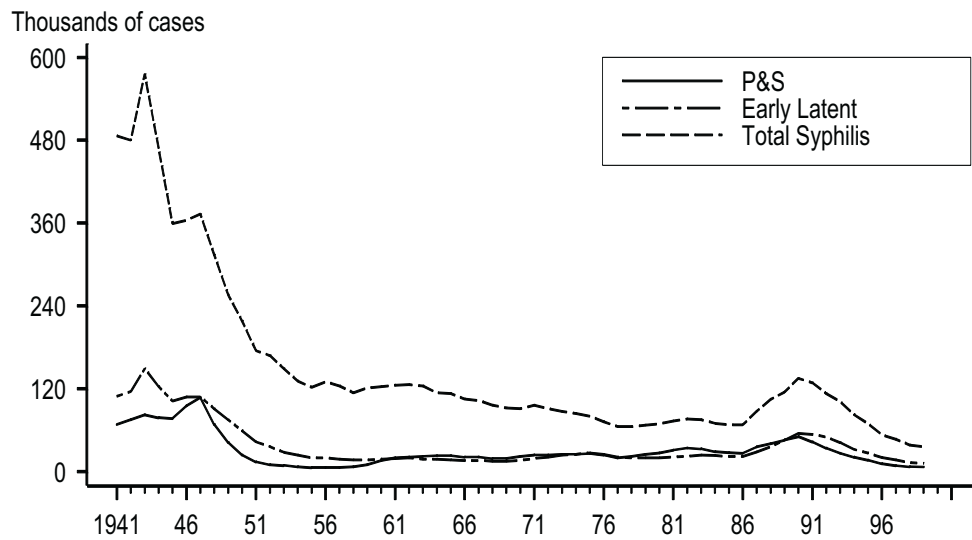
<sup>4</sup>Centers for Disease Control and Prevention. Resurgent bacterial sexually transmitted disease among men who have sex with men – King County, Washington, 1997-1999. *MMWR* 1999;48:773-7.

<sup>5</sup>Miller M, Meyer L, Boufassa F, et al. Sexual behavior changes and protease inhibitor therapy. *AIDS* 1999;14:F33-9.

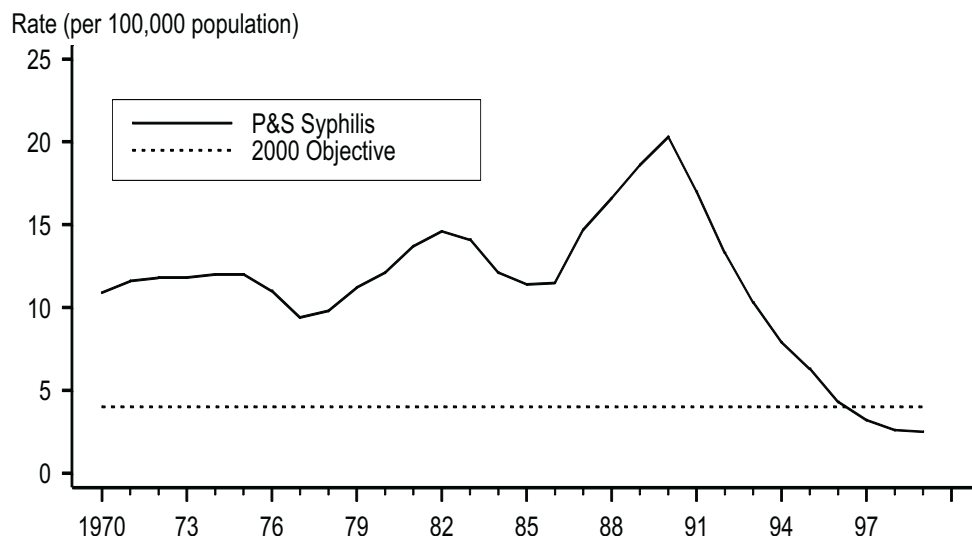
<sup>6</sup>U.S. Department of Health and Human Services. *Healthy People 2010 (Conference Edition, in Two Volumes)*. U.S. Government Printing Office, Washington, DC, 2000.

<sup>7</sup>Centers for Disease Control and Prevention. Congenital Syphilis – United States, 1998. *MMWR* 1998;48:757-61.

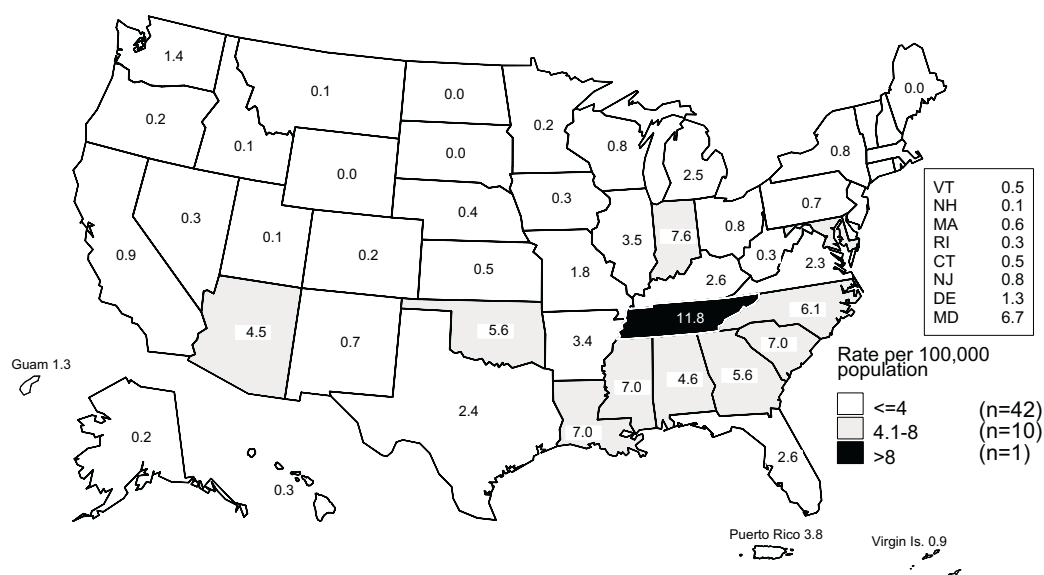
**Figure 23. Syphilis — Reported cases by stage of illness: United States, 1941–1999**



**Figure 24. Primary and secondary syphilis — Reported rates: United States, 1970–1999 and the Healthy People year 2000 objective**

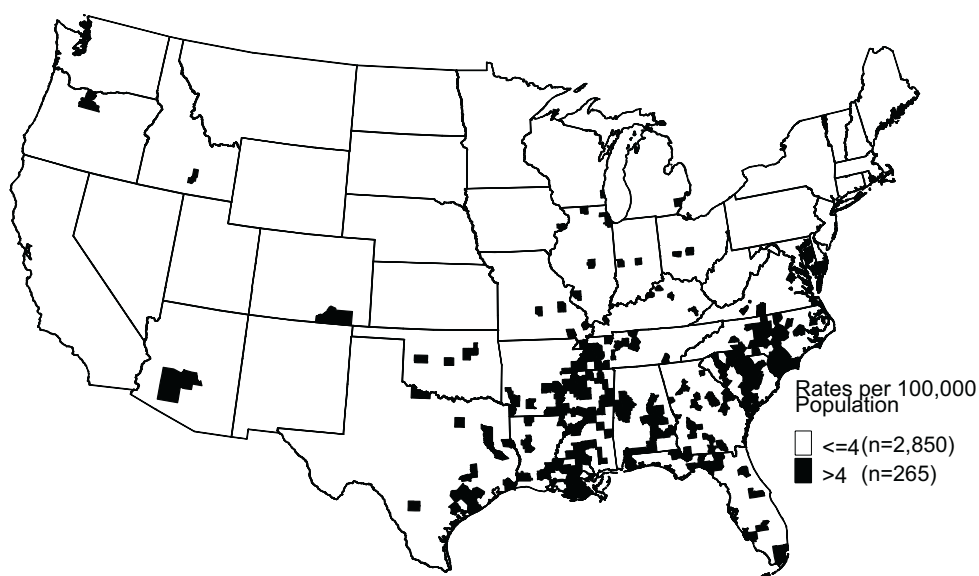


**Figure 25. Primary and secondary syphilis — Rates by state: United States and outlying areas, 1999**

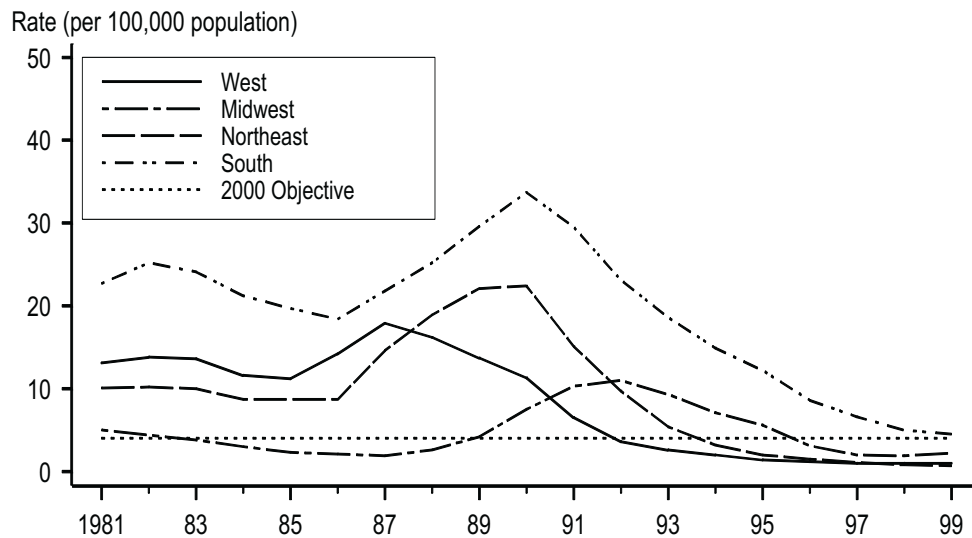


Note: The total rate of primary and secondary syphilis for the United States and outlying areas (including Guam, Puerto Rico and Virgin Islands) was 2.5 per 100,000 population. The Healthy People year 2000 objective is 4.0 per 100,000 population.

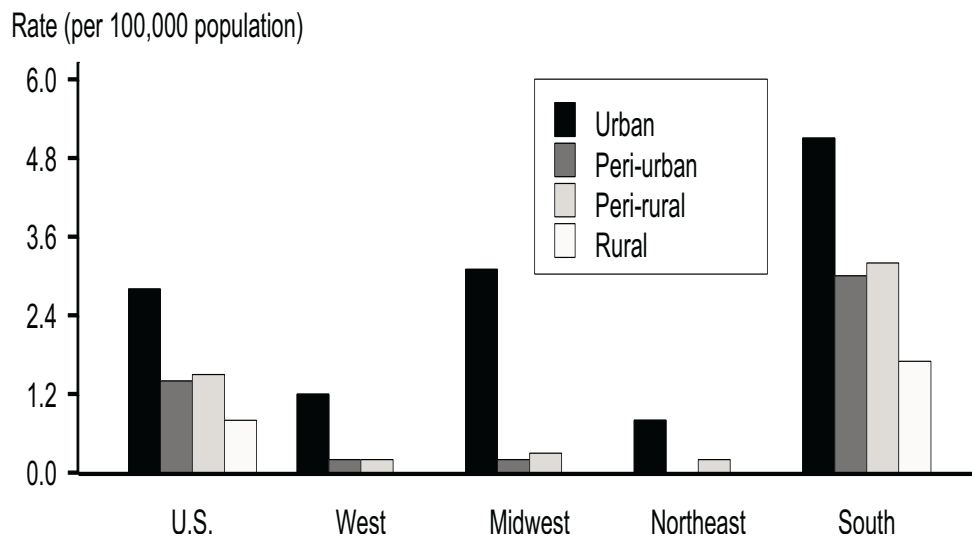
**Figure 26. Primary and secondary syphilis — Counties with rates above and counties with rates below the Healthy People year 2000 objective: United States, 1999**



**Figure 27. Primary and secondary syphilis — Rates by region: United States, 1981–1999 and the Healthy People year 2000 objective**



**Figure 28. Primary and secondary syphilis — Rates by urban-rural category and geographic region, 1999**

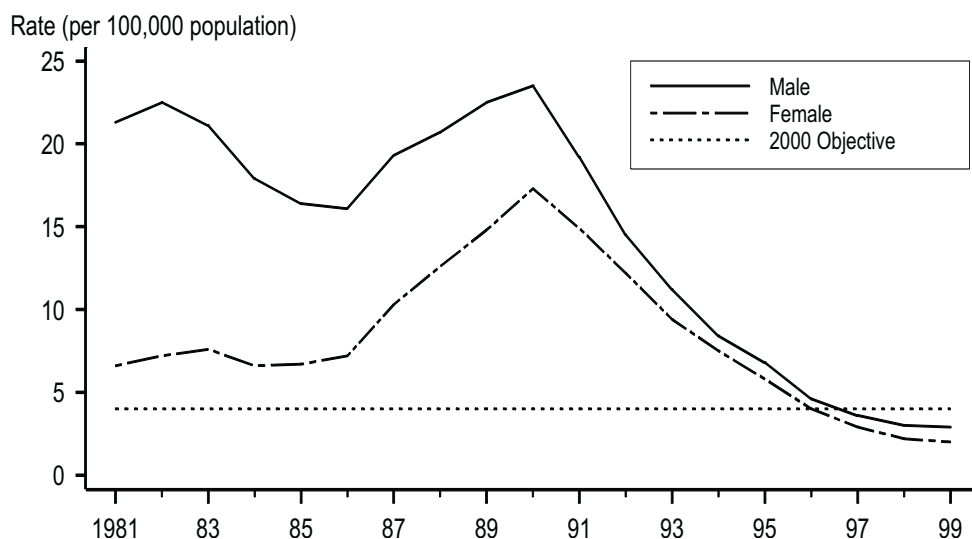


Note: See Appendix for definitions and source of urban-to-rural categories.

**Figure 29. Primary and secondary syphilis — Rates in selected U.S. cities of >200,000 population, 1981–1999 and the Healthy People year 2000 objective**

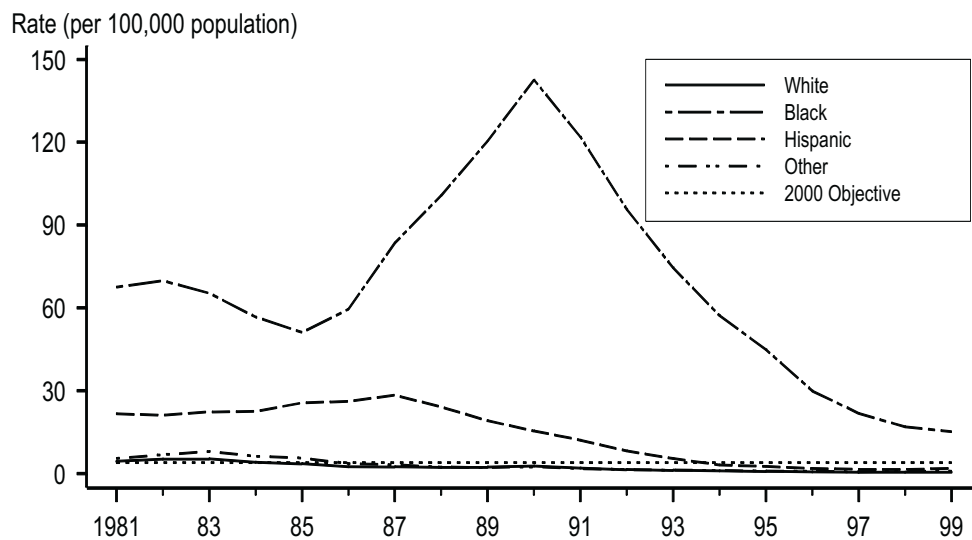


**Figure 30. Primary and secondary syphilis — Rates by gender: United States, 1981–1999 and the Healthy People year 2000 objective**



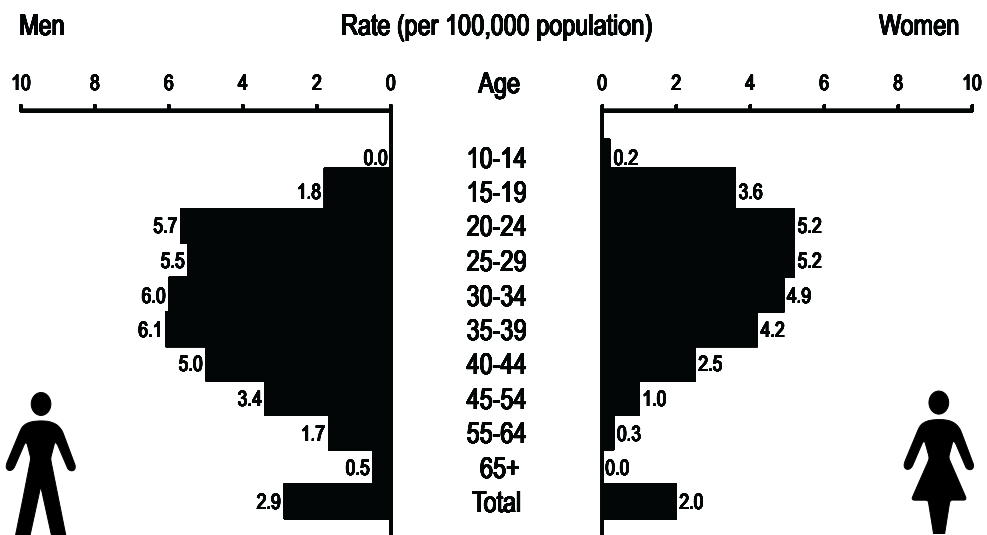


**Figure 31. Primary and secondary syphilis — Rates by race and ethnicity: United States, 1981–1999 and the Healthy People year 2000 objective**

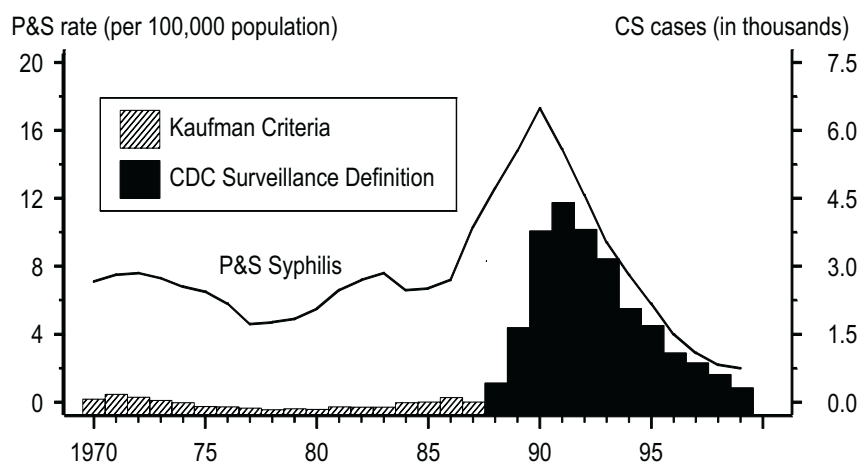


Note: "Other" includes Asian/Pacific Islander and American Indian/Alaska Native populations. Black, White, and Other are non-Hispanic.

**Figure 32. Primary and secondary syphilis — Age- and gender-specific rates: United States, 1999**

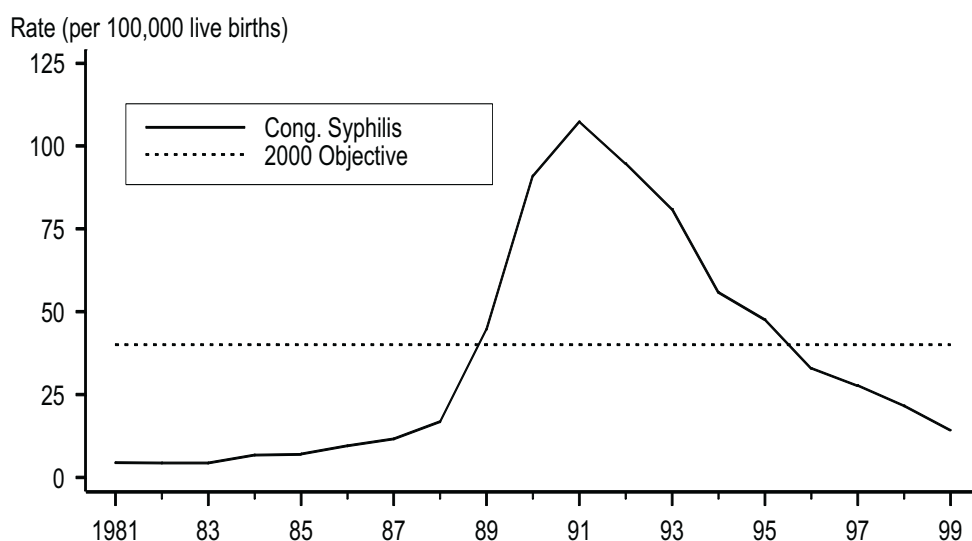


**Figure 33. Congenital syphilis — Reported cases for infants <1 year of age and rates of primary and secondary syphilis among women: United States, 1970–1999**



Note: The surveillance case definition for congenital syphilis changed in 1988 (see Appendix). Case counts for congenital syphilis shown in this graph correspond to those listed in Table 37.

**Figure 34. Congenital syphilis — Rates for infants <1 year of age: United States, 1981–1999 and the Healthy People year 2000 objective**



Note: The surveillance case definition for congenital syphilis changed in 1988 (see Appendix).